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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,009	06/18/2001	Bor-Ming Hsich	MSI-749US	3405
22971 7590 05/16/2007 MICROSOFT CORPORATION ONE MICROSOFT WAY REDMOND, WA 98052-6399			EXAMINER WU, QING YUAN	
			ART UNIT 2194	PAPER NUMBER
			NOTIFICATION DATE 05/16/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

roks@microsoft.com  
ntovar@microsoft.com  
a-rydore@microsoft.com

<b>Office Action Summary</b>	<b>Application No.</b> 09/884,009	<b>Applicant(s)</b> HSIEH, BOR-MING	
	<b>Examiner</b> Qing-Yuan Wu	<b>Art Unit</b> 2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 8-11, 13-21 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-11, 13-21, and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.


**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
 WILLIAM THOMSON  
 SUPERVISORY PATENT EXAMINER

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)<br>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)<br>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____<br>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)<br>6) <input type="checkbox"/> Other: _____ |
|---|--|

**DETAILED ACTION**

1. Claims 1-6, 8-11, 13-21 and 23 are pending in the application.

***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Williams (U.S. Patent 5,872,938) in view of Applicant Admitted Prior Art (hereafter AAPA) (U.S. PG Pub 2002/0194249).
5. Williams was cited in previous office actions.

6. As to claim 23, Williams teaches the invention substantially as claimed including managing a queue with a queue data structure, the queue data structure comprising [abstract]:

a first dimension data field comprising a first plurality of elements that are sortable, one to another with respect to element priority [queue, col. 1, line 66-col. 2, line 5; col. 2, lines 52-56; col. 4, lines 15-30; abstract; Fig. 1]; and

a second dimension data field comprising a second plurality of elements that are sortable, one to another, based on elements priority [subqueue, col. 2, lines 62-65; col. 3, lines 50-61; col. 4, line 57-col. 5, line 12; col. 5, lines 51-53; col. 6, lines 5-9], the second plurality of elements comprising a root element and one or more other elements [top/first/last element(s), col. 4, line 31-56; Fig. 1]; and

executing respective ones of the elements in view of element block priority [abstract; col. 1, line 66-col. 2, line 5; col. 2, lines 14, 40-43 and 62-67; col. 4, lines 16-31].

7. Williams does not specifically teach a run queue or threads. However, Williams disclosed task to be served [col. 1, line 15]. In addition, AAPA teaches storing threads in a run queue for subsequent execution [AAPA, pg. 1, paragraphs 5-6].

8. It would have been obvious to one of an ordinary skill in the art at the time the invention was made, to have modified the teaching of Williams with the teaching of AAPA because Williams and AAPA are in the same field of endeavor and to further extend the functionality of

Williams' queuing of task elements in a multi-dimensional queue by applying it to the queuing of threads in a run queue (see definition of thread and run queue in office action mailed 6/28/06).

9. Claims 1-6, 8-11 and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams and AAPA as applied to claim 23 above, in view of Young (U.S. Patent 6,609,161).

10. Young was cited in the last office action.

11. As to claim 1, this claim is rejected for the same reason as claim 23 above. Williams and AAPA do not specifically teach the association of a second plurality of threads in a deterministic amount of time equivalent to an amount of time to insert a single thread. However, Young teaches in a deterministic amount of time equivalent to an amount of time to insert a SCSI control block (hereafter SCB) into a common queue, associating a second plurality of SCBs that is priority sorted with the common queue in a manner that maintains a priority based scheduling semantic of the common queue [Young, appending target queue with SCSI control blocks (hereafter SCBs) remaining to be transmitted to the end of the common queue, col. 7, lines 36-55; col. 3, lines 13-18; col. 6, lines 1-24; col. 7, lines 47-55; col. 8, lines 30-36; 270A, Fig. 3C].

12. It would have been obvious to one of an ordinary skill in the art at the time the invention was made, to have modified the teaching of Young with the teaching of Williams and AAPA to further extend the functionality and applicability to various execution environment of Young's

multi-dimensional SCB queuing method by applying the sortable priority queuing (priority queue) of threads in a run queue taught by Williams and AAPA.

13. As to claim 2, Williams, AAPA and Young teach the invention substantially as claimed including wherein the second plurality of threads comprises a root thread, and wherein associating the second plurality of threads with the run queue further comprises inserting only the root thread into the run queue to represent the second plurality of nodes [Young, col. 2, lines 33-35, 43-47; col. 3, lines 13-18].

14. As to claim 3, Williams, AAPA and Young do not specifically teach and inserting each thread in the second plurality of threads into the run queue independent of any additional other queue access. However, Young disclosed inserting SCBs from target queues into common queue [Young, col. 7, lines 36-55]. It would have been obvious to one of an ordinary skill in the art at the time the invention was made, to have recognized that no other queues are being access when a preceding thread is inserted in to the run queue.

15. As to claim 4, this claim is rejected for the same reason as claim 2 above.

16. As to claim 5, this claim is rejected for the same reason as claim 2 above. In addition, Williams, AAPA and Young teach the invention substantially as claimed including removing the root thread from the run queue; and responsive to removing the root thread, inserting a next thread of the second plurality of threads into the run queue such that the priority based

scheduling semantic of the run queue is preserved [top/first/last element(s), col. 4, line 31-56; col. 7, lines 50-58; Fig. 1; Young, col. 7, lines 36-55; Figs. 3B-3C].

17. As to claim 6, this claim is rejected for the same reason as claims 3 and 5 above.

18. As to claim 8, Williams, AAPA and Young teach substantially the method for managing a run queue. Therefore, Williams, AAPA and Young teach substantially the system for implementing the method.

19. As to claim 9, this claim is rejected for the same reason as claim 3 above.

20. As to claim 10, this claim is rejected for the same reason as claim 1 above.

21. As to claim 11, this claim is rejected for the same reason as claim 2 above.

22. As to claim 13, this claim is rejected for the same reason as claim 23 above. In addition, Williams, AAPA and Young teach the run queue being implemented in a linked list data structure [abstract; Young, col. 2, lines 25-49; AAPA, paragraph 5, lines 1-4 and Fig. 1].

23. As to claims 14-15, these claims are rejected for the same reason as claims 5-6 above.

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24. As to claims 16, Williams, AAPA and Young teach substantially the method for managing a run queue. Therefore, Williams, AAPA and Young teach substantially the computer-program instructions for implementing the method.

25. As to claim 17, this claim is rejected for the same reason as claim 2 above.

26. As to claim 18, this claim is rejected for the same reason as claim 13 above.

27. As to claim 19, this claim is rejected for the same reason as claim 5 above.

28. As to claim 20, this claim is rejected for the same reason as claim 3 above.

29. As to claim 21, this claim is rejected for the same reason as claim 6 above.

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,570,876 to Aimoto teach multidimensional queue.

***Response to Arguments***



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31. Applicant's arguments filed 3/29/07 have been fully considered but moot in view of the new ground of rejection.

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qing-Yuan Wu whose telephone number is (571) 272-3776. The examiner can normally be reached on 8:30am-6:00pm Monday-Thursday and alternate Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Thomson can be reached on (571) 272-3718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Qing-Yuan Wu

Examiner

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WILLIAM THOMSON  
SUPERVISORY PATENT EXAMINER